

WHAT IS CLAIMED IS:

1. A device for outputting video signal by converting image data expanded in frame memory into video signals and outputting the video signals to a display section, said  
5 device comprising:

a magnification alteration unit which alters a magnification of the image data when converting the image data into the video signals in such a manner that a number of pixels in said frame memory and a number of pixels of  
10 a display area of said display section are equal; and

a control unit which provides control so as to decide whether or not magnification alteration processing is to be performed on the image data by said magnification alteration unit.

15  
2. The device according to claim 1, wherein said frame memory has 640 pixels in a horizontal direction and 480 pixels in a vertical direction, and said magnification alteration unit alters the magnification of the image data by 9/8 in  
20 the horizontal direction when converting it into NTSC mode video signals and alters the magnification of the image data by 9/8 in the horizontal direction and by 6/5 in the vertical direction when converting it into PAL mode video signals.

25

3. The device according to claim 1, wherein said magnification alteration unit alters the magnification of the image data by performing a filtering process on the image data.

5

4. The device according to claim 1, wherein, when said display section displays image data by performing magnification alteration processing of 5/6 in the vertical direction on video signals in PAL mode in which processing data of a vertical line at a predetermined position is deleted, said magnification alteration unit performs the 6/5 magnification alteration processing in the vertical direction by adding data to the same position as the deleted vertical line.

15

5. The device according to claim 1, wherein, when contents of the image data comprise a natural image, said control unit performs control in such a manner that magnification alteration processing is performed on the image data, and when contents of the image data comprise a graphic image, said control unit performs control in such a manner that magnification processing is not performed on the image data.

25

6. The device according to claim 1, wherein, when said display section displays a graphic image superposed on top of a natural image, said control unit performs control in such a manner that magnification alteration processing is performed on the image data of the natural image, and also performs control in such a manner that magnification alteration processing is not performed on the image data of the graphic image.

7. The device according to claim 1, wherein, when the number of pixels of the image data expanded in said frame memory is equal to the number of pixels of the display area of said display section, said control unit performs control in such a manner that the magnification alteration processing is not performed on the image data.

8. The device according to claim 7, further comprising a storage unit which stores image data whose number of pixels is the same as the number of pixels of the display area of said display section, and expanding the stored image data in said frame memory.

9. The device according to claim 7, further comprising an input unit which inputs image data in such a manner that the number of pixels of the image data is equal to the number

of pixels of the display area of said display section, and expanding the input image data in said frame memory.

10. The device according to claim 1, further comprising  
5 a choosing unit which chooses whether or not to execute the magnification alteration processing by the magnification alteration processing means, and when said choosing unit chooses not to execute the magnification alteration processing, said control unit performs control in such a  
10 manner that the 9/8 magnification processing in the horizontal direction and the 6/5 magnification processing in the vertical direction are not performed when the image data is being converted into PAL mode video signals.

11. A device for outputting video signal by converting  
15 image data expanded in frame memory into video signals and outputting the video signals to a display section, said device comprising:

a selection unit which selects which of a first line  
20 or a second line of said frame memory the image data should be output from when the image data is being converted into the video signals;

an output unit which sequentially outputs the image  
data from the first line or second line of said frame memory  
25 in accordance with a result of the selection by said selection

unit; and

a control unit which provides control in such a manner that data of two consecutive lines output from said output unit is overwritten in time shifts and displayed on said display section.

12. The device according to claim 11, wherein, when the number of lines of image data expanded in said frame memory is an odd number, said output unit adds the data of the first line or the last line of the image data to either the topmost end of the image data or the bottommost end of the image data and then outputs the image data.

13. The device according to claim 11, wherein, when the number of lines of image data expanded in said frame memory is an odd number, said output unit deletes the data of the first line or the last line of the image data and then outputs the image data.

14. A method of outputting video signal by converting image data expanded in frame memory into video signals and outputting the video signals to a display section, the method comprising the steps of:

altering a magnification of the image data when converting the image data into the video signals in such

a manner that a number of pixels in said frame memory and a number of pixels of a display area of said display section are equal; and

controlling a decision as to whether or not  
5 magnification alteration processing is to be performed on the image data in the magnification alteration step.

15. The method according to claim 14, wherein said frame memory has 640 pixels in a horizontal direction and 480 pixels  
10 in a vertical direction, and in the magnification alteration step the magnification of the image data is altered by 9/8 in the horizontal direction when converted into NTSC mode video signals, and by 9/8 in the horizontal direction and by 6/5 in the vertical direction when converted into PAL  
15 mode video signals.

16. The method according to claim 14, wherein in the magnification alteration step the magnification of the image data is altered by a filtering process being performed on  
20 the image data.

17. The method according to claim 14, wherein, when said display section displays image data by performing 5/6 magnification alteration processing in the vertical  
25 direction on video signals in PAL mode in which processing

data of a vertical line at a predetermined position is deleted,  
the 6/5 magnification alteration processing in the vertical  
direction is performed in the magnification alteration step  
by data being added to the same position as the deleted  
5 vertical line.

18. The method according to claim 14, wherein, when  
contents of the image data comprise a natural image, control  
is performed in the control step in such a manner that  
10 magnification alteration processing is performed on the  
image data, and when contents of the image data comprise  
a graphic image, control is performed in the control step  
in such a manner that magnification processing is not  
performed on the image data.

15

19. The method according to claim 14, wherein, when said  
display section displays a graphic image superposed on top  
of a natural image, control is performed in the control step  
in such a manner that magnification alteration processing  
20 is performed on the image data of the natural image, and  
control is also performed in such a manner that magnification  
alteration processing is not performed on the image data  
of the graphic image.

25

20. The method according to claim 14, wherein, when the number of pixels of the image data expanded in said frame memory is equal to the number of pixels of the display area of said display section, control is performed in the control  
5 step in such a manner that the magnification alteration processing is not performed on the image data.

21. The method according to claim 20, further comprising the step of storing image data whose pixel number is the  
10 same as the number of pixels of the display area of said display section, and expanding the stored image data in said frame memory.

22. The method according to claim 20, further comprising  
15 the step of inputting image data in such a manner that the number of pixels of the image data is equal to the number of pixels of the display area of said display section, and expanding the input image data in said frame memory.

20 23. The method according to claim 14, further comprising the step of choosing whether or not to execute the magnification alteration processing in the magnification alteration processing step, and when the choice of not  
25 executing the magnification alteration processing is made in the choosing step, control is performed in the control



step in such a manner that the 9/8 magnification processing in the horizontal direction and the 6/5 magnification processing in the vertical direction are not performed when the image data is being converted into PAL mode video signals.

5

24. A method of outputting video signal by converting image data expanded in frame memory into video signals and outputting the video signals to a display section, the method comprising the steps of:

10        selecting which of a first line or a second line of said frame memory the image data should be output from when the image data is being converted into the video signals; and

15        sequentially outputting the image data from the first line or second line of said frame memory in accordance with a result of the selection in the selection step.

25. The method according to claim 24, wherein, when the number of lines of image data expanded in said frame memory is an odd number, data of the first line or the last line of the image data is added in the output step to either the topmost end of the image data or the bottommost end of the image data and then the image data is output.

25

26. The method according to claim 24, wherein, when the number of lines of image data expanded in said frame memory is an odd number, the data of the first line or the last line of the image data is deleted in the output step and  
5 then the image data is output.

27. A computer readable medium for storing instructions, which when executed on a computer, causes the computer to perform a method of outputting video signal by converting  
10 image data expanded in frame memory into video signals and outputting the video signals to a display section, the method comprising the steps of:

altering a magnification of the image data when converting the image data into the video signals in such  
15 a manner that a number of pixels in said frame memory and a number of pixels of a display area of said display section are equal; and

controlling a decision as to whether or not magnification alteration processing is to be performed on  
20 the image data in the magnification alteration step.

28. A computer readable medium for storing instructions, which when executed on a computer, causes the computer to perform a method of outputting video signal by converting  
25 image data expanded in frame memory into video signals and

outputting the video signals to a display section, the method comprising the steps of:

selecting which of a first line or a second line of said frame memory the image data should be output from when  
5 the image data is being converted into the video signals;  
and

sequentially outputting the image data from the first line or second line of said frame memory in accordance with a result of the selection in the selection step.

10